Water Quality Standards
Human Health Criteria
Technical Workgroup
Meeting #7

Alaska Department of Environmental Conservation
Division of Water- Water Quality Standards
May 11, 2016

Webinar instructions:

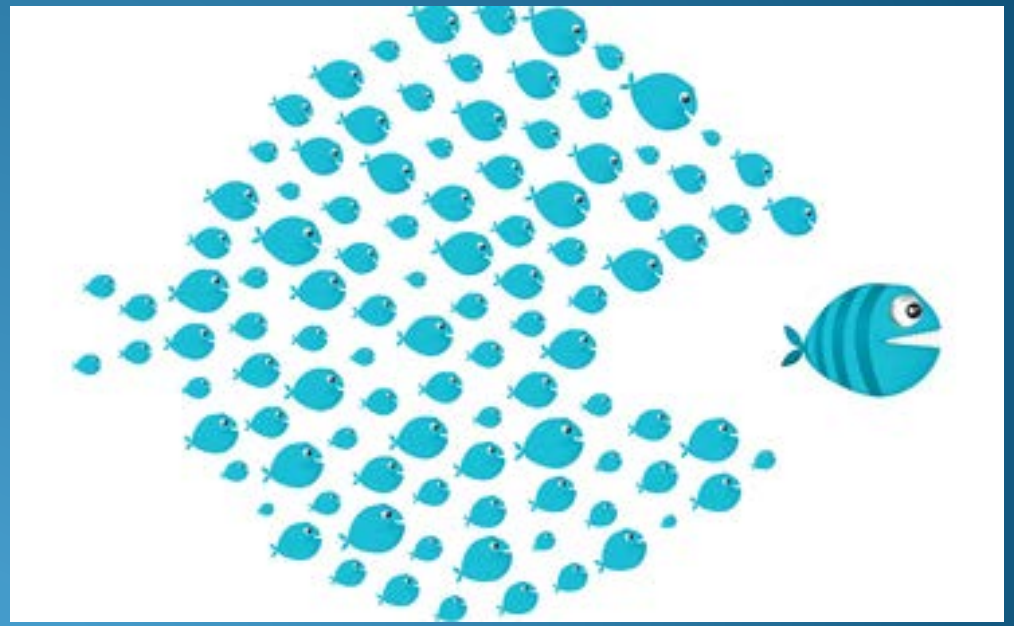
- For audio please dial: **1-800-315-6338**
- Access code: **51851**
- Note that all lines will be muted during the presentations

- Public testimony will be taken at the end of the webinar.

PLEASE BE RESPECTFUL OF ALL PARTICIPANTS

Purpose of Technical Workgroup

- Provide technical feedback on issues associated with development of human health criteria (HHC) in state water quality standards
  - **Develop a Summary Report**
- Identify key sources of information that may be applicable to the process
- Ensure a variety of stakeholder voices are heard



Questions to be considered by the Workgroup

- Issue #1: What information about fish consumption and fish consumption rates is available to inform the HHC process?

- **Issue #2: What options does DEC have for developing criteria on a statewide/regional/site specific basis?**
  - Issue #2a: What modeling approach(es) should DEC consider (Determinstic v. Probabilistic)?

- Issue #3: What is the appropriate level of protection for Alaska and its residents?
  - Issue #3a: How should DEC apply bioconcentration v. bioaccumulation factors?
  - Issue #3b: How should DEC address concerns about its carcinogenic risk value?

Questions to be considered by the Workgroup

- What should Alaska's FCR(s) be?
  - Issue #4a: What species should Alaska include for deriving a fish consumption rate?
    - Marine Fish (i.e., salmon?;)
    - If we include- Can we adjust FCR values based on lipid content?
    - Marine Mammals (AK would be the only state that considers this issue)
  - Issue #4b: What is the role of Relative Source Contribution (RSC) in relation to other exposure issues and what are Alaska's options?
- Issue #5: What are Alaska's options for implementing the proposed criteria?
  - Existing tools (compliance schedules) and new tools (variances, intake credits)

Outline of Today's Meeting

- Recap of Meeting 6
  - Bioaccumulation and Bioconcentration Factors
  - Cancer Risk Level
- Goal of today's meeting:
  - Introduce Statewide, regional and site specific criteria options
  - HHC Issue Gap Inventory Worksheet
  - Next Steps for Workgroup

Recap of Mtg #6

- Draft notes for Meeting 6 – any changes?
- Bioaccumulation and bioconcentration - Monitoring developments
  - Idaho – state specific BAF
  - Washington – using BCF instead of BAF
- Cancer Risk Level
  - Credibility gap – need experts on cancer incidence in Alaska
  - Need to talk with more stakeholders
- Revisit in Fall 2016

Issue #2 Options for Criteria Development: Regional concept

Questions:

1. What are the technical/administrative/policy benefits of adopting a single set of HHC?

2. Is it more technically-appropriate to develop regional criteria based on the availability of data?

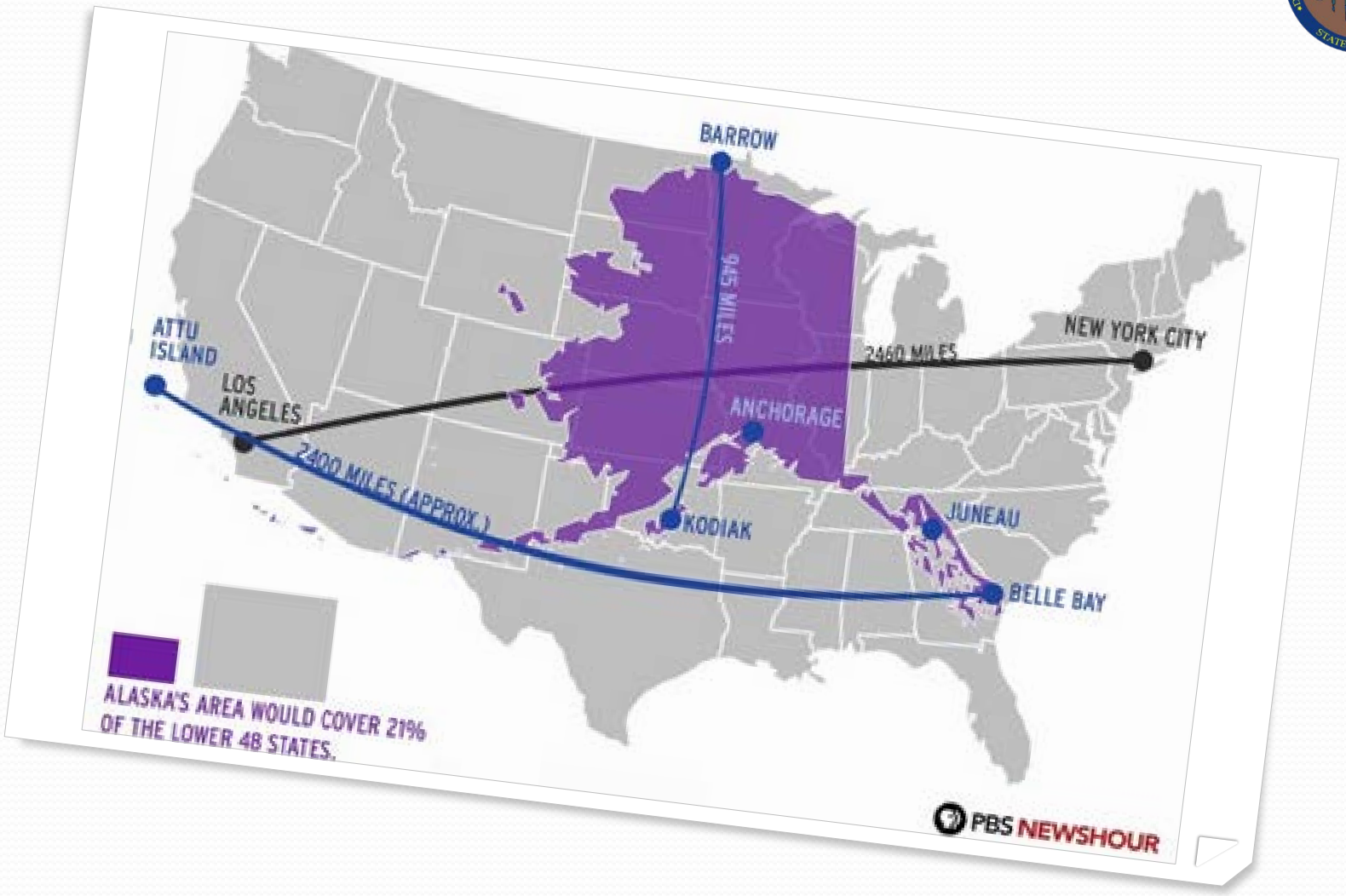
3. Can we have both?

Environmental Regulations

- DEC Water quality criteria apply to all state waters, except
  - Marine water criteria are different from fresh water criteria
  - Site-specific criteria or changes in designated use may be adopted
- ADF&G/DNR regulations may differ based on specific regions
  - DNR land use area and management plans
  - ADF&G game management and subsistence areas
- Boroughs/Cities have zoning authority
  - land use (e.g., stream set-backs, noise ordinances).

Alaska has regional differences

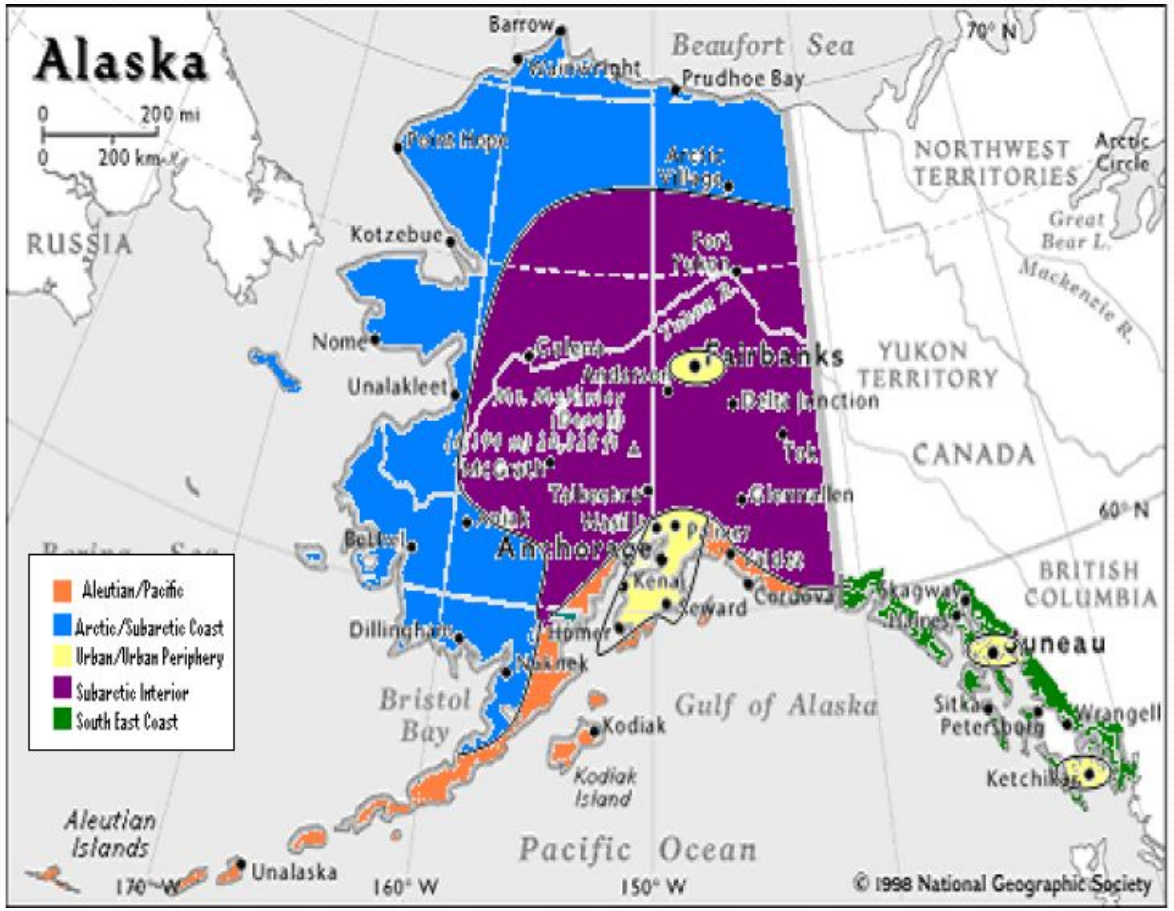
There may be obvious differences in the amount, species, and frequency of fish consumed depending on where you live (think Georgia v. North Dakota)



Previous Efforts: IDM 1997

- Study evaluated different regional scenarios
  - Eco-cultural provided best results
  - Weighting by population has potential to skew results in small communities

- Findings
  - Potential for harvest to slightly overestimate consumption data
  - Not enough data was available make general predictions about individual consumption level



Statewide v. Regional Approaches

Options to consider:

1. Develop a single statewide HHC value (Status Quo)
   - Develop methodology for SSC based on regional/local inputs
     - Bioaccumulation factors
     - Fish consumption rate
     - Relative source contribution

2. Develop a regional approach
   - Develop regions with similar characteristics based on available data (similar to ADF&G)
   - Develop regional HHC based on regional inputs (BAF, FCR, RSC)

Statewide approach

Pro

- Simplifies permitting process; one value regardless of where you live
- Simplifies EPA approval process; limited amount of data to consider

Con

- Risk (actual or perceived) may not be equal across the different regions
- Users of waters that are under or over protected would need to pursue SSC
  - Burden of proof outlined at 18 AAC 70.235 (e) would be on applicant
  - Tribes/rural residents for very high FCR communities
  - Permittees in areas with lower FCR, e.g. urban waters

Regional approach

Pro

- May be a more realistic indicator of exposure and risk to sub-population
- May be a better way of accounting for RSC differences

Con

- Data intensive
- Still likely to be controversial
- Increased number of SSC requests from permittees
  - Still a limited number at the moment

Potential Adjustment Factors- SSC or Regional

- Relative Source Contribution (Toxicity)
  - EPA provides a means for adjusting
  - Option to account for marine mammal consumption
- Fish Consumption Rate (Exposure)
  - Needs a method for collecting and processing data
- Bioaccumulation/Bioconcentration (Exposure)
  - Harder to develop regional BAF due to technical issues with data collection.

Discussion- Sample Questions

- Initial thoughts?
- Significant benefits to one approach versus another?
- What are the most significant technical barriers to either approach?
- What resources may be available to overcome these barriers?

Next steps for Workgroup

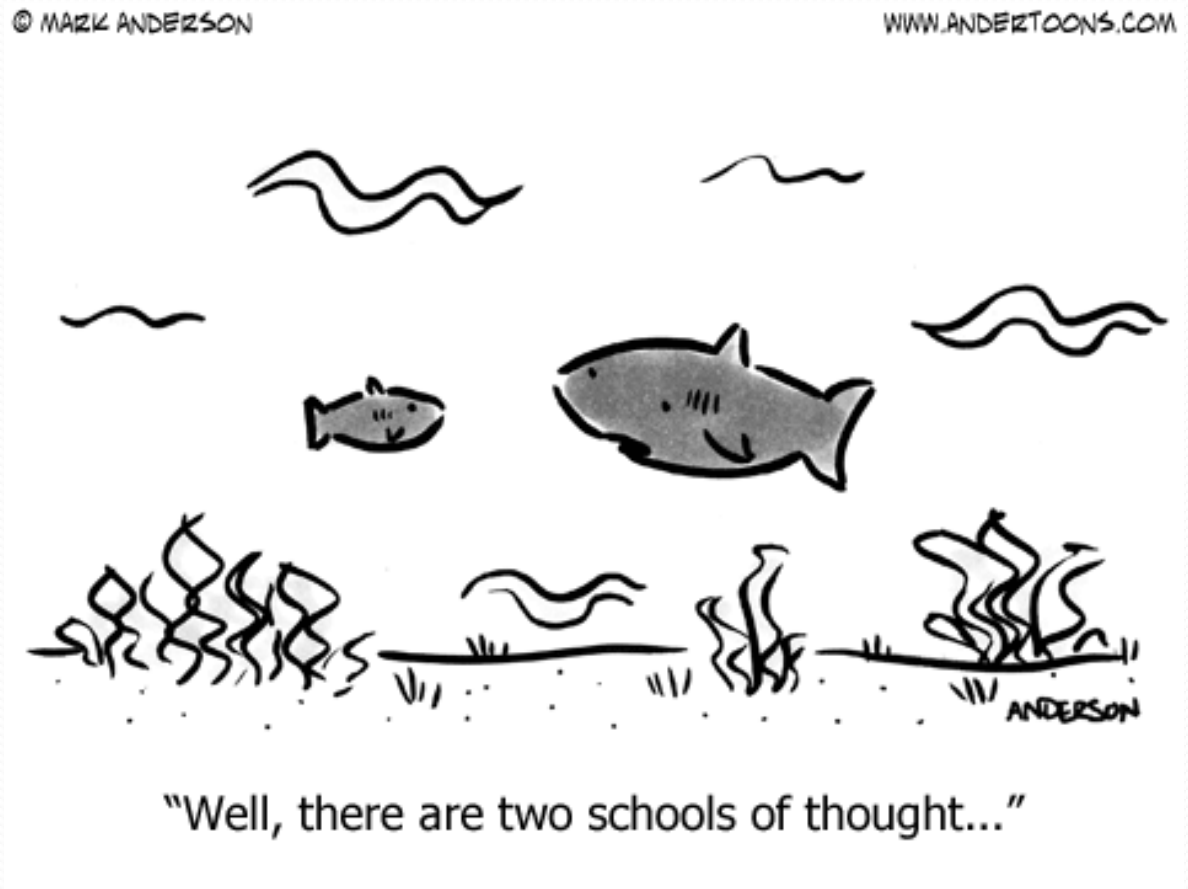
Draft Gap Inventory – Developed by Alison with DEC input

- Provides a tangible document that covers what we have discussed, lingering issues, and potential directions to explore
- DEC would like your individual feedback on the different points- all opinions are valuable
- Will serve as foundation for work to take place this summer and fall

Future participation in the Workgroup?

- Reconvene in the fall to discuss inter-relationship of HHC inputs and risk management.

Thank you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"Well, there are two schools of thought..."

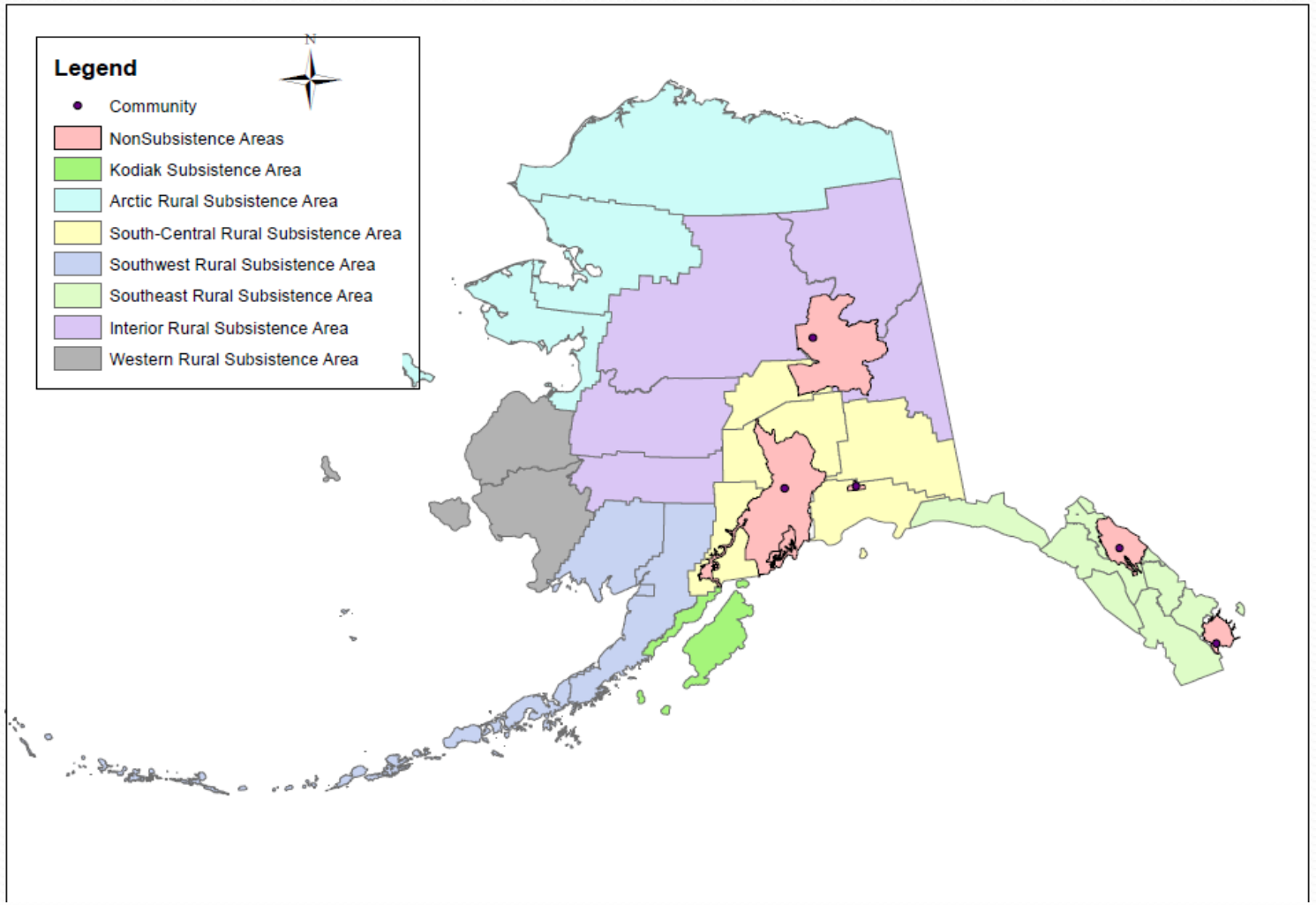
ADF&G Subsistence Areas

Division of Subsistence
Mission Statement:
To scientifically quantify, evaluate, and report information about customary and traditional uses of fish and wildlife resources.

For subsistence classification purposes ADF&G use a combination of census areas and boroughs

- Total of **seven** rural regions
  - Rural Population (124,856)

- ADF&G has some urban information
  - Urban Population (607,442)
  - Nonsubsistence areas include
    - Fairbanks
    - Anchorage
    - Valdez
    - Juneau
    - Ketchikan



HHC Formula: Variables with Regional Attributes

- **Relative Source Contribution (RSC)**
  - Accounts for uncertainty
  - (0.2 – 0.8)
  - Drives the toxicity value down
- **Fish Consumption Rate (FCR)**
  - Accounts for actual exposure via diet
  - Drives the exposure value up
- **Bioaccumulation Factor (BAF)**
  - Accounts for chemical concentration in aquatic life
  - Drives the exposure value up

$$\text{HHC} = \frac{\text{Toxicity Dose}}{\text{Exposure}} \times \text{Uncertainty}$$

HHC Equation: (Non-Carc)

$$\frac{\text{RfD} \times \text{RSC} \times \text{BW}}{(\text{FCR} \times \text{BAF}) + \text{DI}}$$